

### REMARKS

This amendment, which is timely with the automatic grant of the accompanying Petition for Extension of Time, is submitted in response to the Office Action dated July 17, 2003, wherein all of the pending claims (*i.e.*, claim 1 – 30) of the application were rejected under 35 U.S.C. § 103 as being “obvious” over different combinations of prior art patents and allegedly admitted prior art, and claims 19 and 20 were rejected as being indefinite under 35 U.S.C. § 112. By this amendment, applicant has canceled claims 19, 20 and 27, and has amended claims 1, 6, 7, 8, 10, 11, 12, 13 and 22. Accordingly, Claims 1 – 18 and 21 – 26 and 28 – 30 are pending in the application. Reexamination and reconsideration are respectfully requested.

#### Change of Address

On June 17, 2003, the undersigned filed a “Change of Correspondence Address” form with the U.S. Patent and Trademark Office for this application, along with the Request for Continued Examination (“RCE”) and an associated Amendment. Nonetheless, the Office Action mailed in response to the RCE and amendment was sent to the prior correspondence address, resulting in delay in receipt by applicant’s attorneys. It is respectfully requested that the USPTO records be updated to reflect the new correspondence address for Applicant’s attorneys. Another “Change of Correspondence Address” form is being submitted herewith.

#### Claim Amendments and Additions

Claims 19 and 20 were rejected on the basis that the terms “fraction of a second” and “small fraction of a second” are indefinite. Applicant disagrees with the examiner on this point, as these terms convey with reasonable precision what is being claimed. (See, for example, MPEP § 2173.05(b).) Nonetheless, applicant prefers the term “real time” and has amended the claims to eliminate reference to “fraction of a second” or “small fraction of a second”. While the examiner’s rejection was limited to claims 19 and 20, applicant has, nonetheless, amended all of the claims to incorporate the term “real time” instead of “fraction of a second” or “small fraction of a second.” In addition, rejected claims 19 and 20 have been canceled because they depended from a base claim which already specifies that certain events occur in “real time”. Likewise, with the amendment of independent claim 11 to incorporate the “real time” limitation, claim 27 is unnecessary and has, therefore, also been canceled.

An exemplary definition of “real time” is: “In solving a problem, a speed sufficient to give an answer within the actual time the problem must be solved.” (Modern Dictionary of Electronics, R. Graf, Ed., Howard W. Sams & Co.). In the context of the present invention, the problem of user notification must be “solved” within a time frame that is very prompt so that the user is accurately aware of device status without delay, specifically, the problem of warning the user in real time not to connect or disconnect a USB device while the port is being reconfigured. However, because the purpose of the notice is to warn and inform a human user, there is no need for this to occur faster than a user’s reaction time, *i.e.*, a fraction of a second. Real time sometimes has the connotation that once information is collected it is processed without interruption. Thus, real time processing is sometimes viewed in contrast to batch processing. Of course in any modern computer system various functions are performed during each clock cycle, or upon completion of a set number of clock cycles, and so, strictly speaking, processing of the information may be delayed for very small time increments. Thus, if there is perceived to be any conflict between these connotations, the concept of providing a timely “answer,” *i.e.*, timely information to avert system crashes, is better suited to the meaning of “real time” in the context of the present invention.

Claim 6 has been amended to be dependent on claim 2 rather than claim 1. This correction was made because claim 6 refers to “said indication unit” which has its antecedent in claim 2, not in claim 1.

Claim 8 has been amended to improve the grammatical structure.

Claim 10 has been amended to eliminate the unnecessary “whereby” clause.

Various amendment have been made to claim 11 to accommodate the incorporation of “real time” as described above. In addition, claim 11 has been amended to specify that the claimed method relates to USB ports.

To provide greater accuracy, claim 13 has been amended to eliminate the reference to “universal serial bus crashes” in the preamble. Needless to say, it is the computer operating system software, not the USB, that crashes. While it is believed that this would have been understood, Applicant has taken this opportunity to clarify.

Claim 22 has been amended to correct a typographical error.

### Response to Rejections

Claims 1 – 13, 15 – 16, 18 – 20, 24 and 27 – 29 were rejected under § 103 as being obvious over “applicant admitted prior art” in combination with Kampe et al. (U.S. Pat. No. 5,953,010) and Wilson et al. (U.S. Pat. No. 5,386,360). Applicant respectfully traverses this rejection.

The examiner’s rejection rests entirely on an improper hindsight reconstruction of the applicant’s invention, totally ignoring the fundamental precept of patent law requiring that in order to combine references it is necessary for the examiner to show some suggestion or other motivation which would induce someone of ordinary skill in the art to make the combination. See MPEP § 2143. Instead of proceeding in the legally correct manner, the examiner has taken isolated and unrelated teachings out of context to try to cobble together what is claimed. In doing so, the examiner has stretched and distorted what the references actually teach, and has stretched and distorted what the applicant has admitted. When viewed in a legally correct manner, the prior art does not come close to making what is claimed obvious.

The Microsoft “Windows” operating system, particularly as it existed at the time this application was filed, was notoriously unstable, with system crashes being a significant problem for many users. Applicant, which designs and manufactures various types of personal computers (PC’s) which use the Windows operating system, noted the existence of a particular problem of system crashes associated with the plugging and unplugging of peripheral devices connected via PC USB ports. Applicant further determined that the problem was exacerbated by the use of a compound hub, which provides various types of device ports, connected to a PC via a USB port. Applicant also recognized that the existing mechanism by which the Windows operating system provided the user with information about the status of device ports was inadequate, inaccurate and ambiguous, such that it was insufficient to avert crashes associated with USB port reconfiguration. Needless to say, the applicant would not have gone to the trouble of developing the claimed invention if the Windows operating system was already able to provide users with adequate, reliable, real time information about USB port status.

The examiner has completely failed to show that any of these issues, which constitute the *starting point* for the present invention, were known in the prior art. While the applicant discussed some of these issues in describing the background of the invention, it is improper for the examiner to consider the background discussion to constitute an admission of the contents of

the prior art – specifically that these problems were generally known or that motivation existed to address them. Thus, for example, the background problems described on page 2 of the present application are not shown by the examiner to be known problems, and there is no admission anywhere in the application that these problems were known.

Thus, the application teaches that to the very limited extent it was known in the prior art to provide *any* notification that a device connected via a USB port is undergoing configuration, the only admitted notification is an ambiguous “system busy” hourglass (or equivalent) symbol which may appear on the display screen in place of the mouse cursor. The application points out that this “system busy” notification (1) does not constitute a warning to the user that the USB port is being configured and (2) does not respond in real time. As any user of the Windows operating system appreciates, the hourglass symbol appears many times for many reasons, and its appearance is thus ambiguous. Moreover, the appearance merely gives notice that the system is busy and may not be immediately responsive to further inputs. The hourglass does not warn the user that taking certain actions when the hourglass is displayed may cause the system to crash. Moreover, the hourglass symbol is not updated in real time, *i.e.*, within a fraction of a second of when an event occurs. It is the multiple deficiencies with the “system busy” icon which, in part, led to the present invention.

The examiner then points to Kampe et al. as allegedly teaching how to cure the problems *identified by the applicant*. However, the examiner *ignores* the requirement of showing why someone of ordinary skill in the art would have been motivated to combine the teachings of Kampe et al. with the known functionality of the Windows operating system. It is clear that the examiner is, instead, simply piecing together the claimed invention by taking the teachings of Kampe et al. out of context.

The simple fact is that the Kampe et al. reference is not at all germane to the claimed invention. Kampe et al. discloses a program which intercepts text messages directed to the system display *during the system initialization* or “boot-up” process, and substitutes icons or other indicators concerning the status of the initialization process which are more informative and user friendly. Kampe et al. is not concerned about system monitoring after the operating system has been loaded and “boot-up” completed. Kampe et al. also discloses a logging system for recording the initialization process so that any boot-up errors can be identified after-the-fact by reviewing the event log. Thus, while the reference teaches a mechanism for determining the

cause of a system crash during the initialization process, it has nothing to do with providing real time information which is useful for the purpose of *preventing* problems from occurring.

Moreover, Kampe et al.'s program does *not* operate on internal messages relating to device configuration, nor is there any suggestion that the program be modified to act on such messages. (In a briefly described second embodiment, Kampe et al describes the concept that their iconic messages could be generated by the operating system directly during the boot-up process. However, this embodiment is also unconcerned with message or device monitoring.)

Kampe et al. is not concerned with providing real time notice to avoid system crashes associated with plugging and unplugging peripheral devices. Rather the Kampe et al. program is merely for the purpose of logging and displaying in a user friendly manner system boot up information. Because Kampe et al is limited to this purpose, there is no need to provide the user the type of real time information which is required to avoid system crashes. Thus, Kampe et al. specifically teach that their information need only be updated "every few seconds", and that the update intervals of "20 to 40 seconds" are within the scope of their invention. These time frames may be adequate for a program which is merely intended to monitor the progress of system initialization, but are inadequate to provide the real time notice required to avoid system crashes.

Kampe et al. is completely unconcerned with the status of "plug and play devices" containing no mention of them, or of USB (or other) ports, or of the problem of system instability when devices are being configured. Indeed, there is nothing in Kampe et al. which suggests that they use a dynamically configurable operating system which senses a change in the number of devices coupled to the computer as required, for example, by claim 1.

There is no motivation shown for combining the "system busy" hourglass icon of the admitted prior art, with the Kampe et al program for intercepting difficult-to-comprehend text messages directed to the computer screen to provide enhanced monitoring of system initialization.

The lack of appropriate motivation to combined these references is further shown by the fact that neither the "admitted prior art" nor Kampe et al. recognize the system instability problem associated with connecting devices to a computer via a USB port, especially via a USB port which is a compound hub having non-USB device ports. The known prior art does not suggest any awareness of the problem or of the associated increases risk of system crashes. It is believed that the prior art assumed that USB ports and devices are stable and no special

precautions were required to control the process of connecting and disconnecting devices via a USB port. Thus, part of the invention lies in the recognition of the problem, and in the means for solving the problem. It is submitted that the Examiner is using hindsight gained from the present application's teachings concerning the problem to be solved, to pick and choose features from the prior art to allege the obviousness of the present invention.

The examiner next admits that: "Both the AAPA and Kampe fail to teach the visual display for notifying the user in real time." Using hindsight, the examiner then purports to find this missing piece of the claimed invention in the Wilson et al. patent. However, Wilson et al. is concerned with a much different problem than *either* the so-called AAPA *or* Kampe et al., and again, the examiner fails to show why the teachings of Wilson have any relevance, or why someone of ordinary skill in the art would have been motivated to combine these very disparate references.

Wilson et al. is directed to computer based security system which monitors and controls various sensors, alarms, smoke detectors, etc., connected to the system using a specialized, proprietary "I/O Bridge", "which interfaces signals from electronically-controlled devices to the PC via the PC's keyboard port." (Col. 3, lines 40 – 42.) The I/O bride is designed to be controlled by a specific application software program, and the system is reconfigurable using the application software which allows a user to specify which alarms, etc, should be controlled and/or monitored.

The Wilson et al. patent makes absolutely no mention of USB ports or devices, nor does it make any mention of the problem of system crashes due to connecting or removing peripheral devices to a USB port while it is being configured by the operating system. Wilson et al. do not disclose the use of a dynamically reconfigurable operating system which senses the number of peripheral devices connected to the system. It is well known that keyboard ports, which are designed to operate with a specific type of device and, therefore, do not require reconfiguration, are much different in operation than USB ports, which must be reconfigurable to operate with a very large variety of devices. Moreover, Wilson et al. makes no mention of any problems associated with automatic internal system topology reconfiguration associated with connecting or disconnecting devices from the computer (or from the I/O bridge) while the system is in operation. Wilson et al. is strictly concerned with real time monitoring and control of events and devices which are *external* to the computer, the computer operating system and the computer's

ports. The information which is fed to the I/O bridge is already in the form of digital or analog data that is merely passed onto the computer and interpreted by the application software, for example, to see if it falls within desired ranges. It is a much different thing to monitor and display in real time a temperature reading from an *external* temperature sensor, than to monitor and display in real time the status of the *internal* configuration of a computer's operating system to ensure that unsafe device changes are not made. Indeed, the combination of the application software and hardware in Wilson et al., allows the user to enable or disable (*i.e.*, connect or disconnect) external devices without the need to physically effect the connection or disconnection. Thus, Wilson et al. is not the least bit concerned with problems associated with plugging and unplugging devices to device ports.

Wilson et al. describes the use of background "driver" programs, referred to as "INIT" programs, which are associated with monitoring and controlling the I/O devices. (Col. 5, lines 25 – 26.) The patent assumes, throughout, that these programs have been loaded into system memory, and makes no mention of any problems associated with connecting or disconnecting devices to the system while the various "INIT" driver programs are being loaded or reconfigured. Once in place, the INIT program can monitor and display information from a device in real time, just as a keyboard driver can display in real time keystrokes entered by a user.

Thus, in summary: (1) the so-called AAPA shows that the Windows operating system crudely and inaccurately shows system status information using an ambiguous "hourglass" or similar icon that does not provide information in real time and, therefore does not protect against system crashes associated with connecting and disconnecting devices via a USB port that is undergoing reconfiguration; (2) Kampe et al. shows a system for translating complex text messages being sent to a computer monitor *during system initialization* and converting them to easy to understand icons; and (3) Wilson et al. shows a system for monitoring and controlling peripheral sensors, alarms, monitors and the like using proprietary software, software drivers and an I/O bridge. Thus, these references are each directed to much different inventions and situations which have no relationship to one another, and none of them recognize the problems solved by the present invention. There is no explicit suggestion in any of the references which would lead one of ordinary skill in the art to combine them, nor has the examiner has shown any reason why someone of ordinary skill in the art would combine these three very different

teachings, (nor do the references disclose what is claimed even if they could properly be combined).

With regard to claim 2, the Examiner again fails to show any motivation to modify the so-called admitted prior art to arrive at the present invention based on the teachings of Kampe et al. The admitted prior art relates to circulating internal binary messages to various programs running on a system such that inputs which may be relevant to a particular program are delivered to the program. Thus, for example, entry of a particular keystroke combination might be cause a machine code message to be circulated by the operating system and delivered to all running programs, causing any programs which have an output being displayed on the system monitor to “minimize” their display. Kampe et al. relates to intercepting text messages being sent to the display. These are very different types of messages, and the Examiner has failed to explain why someone of ordinary skill in the art would want to modify a system which intercepts text messages during system initialization to monitor *internal* messages which relate to plug and play device configuration.

As to claims 3, 7, 8, 11 – 13 and 28 – 29, neither reference shows or suggests using *three different indicators* to indicate the status of a plug and play device port. The examiner fails to show where this appears in Kampe et al. Kampe et al. has no teaching concerning the status of device ports, nor does it teach the use of *three* distinct indicators. Without any support, the examiner asserts that the specific teaching of Kampe et al., in the context of system initialization, can be generalized to *any* process which can be characterized as having a starting point and an ending point separated by a significant time interval therebetween. The examiner then applies this generalized teaching (which is not in Kampe et al.) and applies it to solve a problem which had not been recognized in the prior art. This is improper.

As to claims 4, 5, 9 and 10, the examiner’s rejection is not clear. Applicant admits that USB ports and hubs are known in the prior art and were used with computers running the Windows operating system. Indeed, the present invention is specifically directed to solving a problem associated with this known combination. However, it is not clear what is meant by it would have been obvious to use a USB port with the “disclosed system.” (Paragraph 11, line 4.)

There is nothing in Kampe et al. which relates to USB ports or serial ports, and so it is not clear why one would look to Kampe et al. for teachings concerning monitoring such ports. As disclosed in the application, it is believed that the use of a compound USB hub enhances the

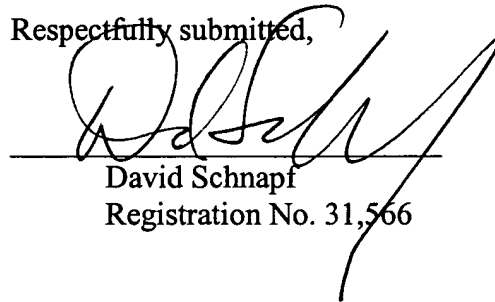
problem of system crashes associated with untimely connection of plug and play devices. This problem is not disclosed in the known prior art, and so there would be no motivation to employ a real time monitoring system. As to claims 9 and 10, the present application teaches that the problem of system crashes appears to be more pronounced when coupling non-USB plug and play devices via a USB compound hub. This teaching, which provides a part of the motivation for the present invention, is absent from the known prior art.

### Conclusion

For the foregoing reasons, it is submitted that claims 1 – 18, 21 – 26, and 28 – 30 are in condition for allowance and such action is earnestly solicited. The Examiner is invited to call the undersigned at the phone number listed if doing so might advance prosecution of the application.

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